UNCLASSIFIED

# BUILDING THE DAML ELECTRONIC COMMERCE DOMAIN

QUARTERLY R&D STATUS REPORT
No. 2.

David E. Anyiwo
Department of Business Administration
Bowie State University
Bowie, Maryland 20715

November 15, 2001

20030915 078

BOWIE STATE UNIVERSITY
14000 Jericho Park Road
Bowie, Maryland 20715-9465

UNCLASSIFIED

## Progress during the Reporting Period

The project captured additional functional and technical requirements for collaboration and exchange in the electronics industry's value chain, and refined the eCommerce domain ontology requirements identified in the previous quarter. The effort this quarter focused on analyzing e-business models and the development of a strategic framework for planning the implementation of an integrated "collaborative" model. A major strategic business assumption underlying the modeling process is that worldwide B2B e-commerce will continue to grow at aggressive rates through 2003, when e-business becomes the predominant means of marketing in many industries, causing a massive upswing in 2004 and driving fundamental changes to the way enterprises do business with each other. Also, it is assumed that e-marketplaces will drive nearly 40 percent of B2B e-commerce transactions in 2004. The probability of occurrence of the market outcomes predicted above is estimated at about 20 percent.

Other accomplishments this quarter include the design and mark-up of e-commerce ontologies encompassing the business models. We applied use cases to capture requirements from the stakeholders. Ontology design was driven by the concepts of scalability, agility and interoperability. The ontologies enable sellers, buyers, and other participants in the electronic marketplace to leverage meaningful business intelligence captured through the analysis of relevant eCommerce transactions. The DAML e-commerce ontology domain was designed to support diverse electronic commerce models and facilitate the discovery of rich semantic descriptions of commercial products and services.

## Planned Activities and Milestones for the next Quarter

The project Web site will be featured on the Internet as soon as the e-Gateway server is delivered in the next quarter. We plan to build and deploy a prototype DAML-driven e-portal to demonstrate the utility and benefits of the proposed DAML e-Gateway to the computer and electronics industry shortly after the installation of the e-Gateway server. Other activities planned in the next quarter include the final design of DAML e-Gateway as well as the packaging of our DAML-based eServices – a suite of superior Web services for both government and commercial markets. We intend to reach the field demonstration milestone by the end of the third quarter.

## Major Items or Special Equipment Purchased this Quarter

We continued to experience considerable bureaucratic problems in the processing of research equipment procurement this quarter. This situation was overcome by using personal equipment and other resources.

## Summary of the Substantive Information Derived during the Reporting Period

We learned from our extensive modeling effort that ontology design is a central issue in the development of electronic commerce systems. The criticality of standardization of business models, processes, and knowledge architecture was emphasized in most literature we reviewed.

## Summary of Problems or Areas of Concern

The growing complexity of the electronics-manufacturing environment makes it increasingly difficult for some trading partners to describe their products or services, separately and in combination. Institutional constraints at BSU continued to impede timely acquisition of crucial research equipment. Some planned project activities could not be executed this quarter because of time restrictions. The teaching load of the PI was expanded beyond the expected level. Furthermore, the scope of the project's outreach initiative was curtailed substantially as a result of the cancellation of the planned ontology workshop.

The lack of a common e-Commerce ontology framework poses a major problem in the provision of cross-enterprise information management services in the rapidly evolving B2B e-marketplace. We plan to contribute to the search for a solution to this problem in the next stage of this project. Another future thrust of this project is to extend the design of DAMLGate's eCommerce Ontology Manager to handle business-to-consumer (B2C) and other e-Commerce domain applications. Furthermore, the project will contribute to the effort to build the next generation e-Commerce architecture and advanced e-business software tools. We will continue to enhance the interconnectivity of DAML tools with other existing or emerging e-Commerce applications and standards.

## Related Accomplishments since Last Report

We established some measures that will be used to assess the effectiveness of the e-portal services delivered through the DAML e-Gateway. The measures relate to:

- Server/Network/Help Desk Support
- Web Traffic - Recency measures the duration between visits by portal users, and Traffic tracking can help identify peak usage times for the DAML e-Gateway, enabling improved allocation of personnel and other resources. Also, traffic logs will be used to establish general trends and patterns, and for other planning purposes.
- Cost Impact - the net impact of using the e-portal services on the participating firm's total logistical costs.

A composite metric is being developed to measure the awareness, attractability, contact, conversion, stickiness, and retention efficiencies of the DAML e-Gateway site. Also, a metric to assess the degree of user satisfaction will be developed.

# Building the DAML ECommerece Domain Project
## Bowie State University

## Phase 2 Effort Analysis

The following is the structure of task performance inf Phase 2 of the project. Phase 2 was initiated on August 16, 2001 and completed on November 15, 2001.

| | | | | | | |
|---|---|---|---:|---|---:|---:|
| **E-Business Modeling** | * Develop an e-business Model Ontology Framework | David | 8 | hrs | 32.00% | 469.87 | 739.79 |
| | * Formulate and analyze B@B and other eCommerece models | David | 12 | hrs | 48.00% | 704.81 | 1,109.69 |
| | * Develop a Strategic Framework for B2B Model Implementation | David | 5 | hrs | 71.43% | 293.67 | 462.37 |
| | | **Total** | **25** | **hrs** | **80.00%** | **1,174.68** | **1,849.48** |
| **Requirements Review/** | * Apply Use Cases to facilitate requirements discovery | David | 7 | hrs | 28.00% | 411.14 | 647.32 |
| **Update** | * Identify additional System and End User requirements | David | 10 | hrs | 40.00% | 587.34 | 924.74 |
| | * Update and integrate architercturäl, functional, technical and other requirements | David | 8 | hrs | 32.00% | 469.87 | 739.79 |
| | | **Total** | **25** | **hrs** | **100.00%** | **1,468.35** | **2,311.85** |
| **Achitectural Design** | * Design the functional architecture of DAMPLGate | David | 7 | hrs | 46.67% | 411.14 | 647.32 |
| | * Desgin the technical/system archietecture of DAMPLGate | David | 8 | hrs | 53.33% | 469.87 | 739.79 |
| | | **Total** | **15** | **hrs** | **100.00%** | **881.01** | **1,387.11** |
| **Datatbase Design** | * Prepare Management Plan | David | 7 | hrs | 38.89% | 411.14 | 647.32 |
| | * Draft high-level Database Design Specifications | David | 8 | hrs | 44.44% | 469.87 | 739.79 |
| | * Review Design Specifications and Management Plan | SME | 10 | hrs | 55.56% | | 739.79 |
| | | **Total** | **18** | **hrs** | **100.00%** | **469.87** | **739.79** |
| **Ontology Design and** | * Create and markup Domain, Process and other Ontologies | David | 15 | hrs | 12.20% | 881.01 | 1,387.11 |
| **Markup** | for the electronics industry | Marcel | 48 | hrs | 39.02% | 733.81 | 718.11 |
| | | Uchenna | 60 | hrs | 48.78% | 1,135.86 | 984.64 |
| | | **Total** | **123** | **hrs** | **100.00%** | **1,869.67** | **3,089.86** |
| **Transition** | * Coordinate with DARPA and DAML developers | David | 10 | hrs | 8.13% | 587.34 | 924.74 |
| | * Respond to new ideas and opportunities | David | 10 | hrs | 8.13% | 587.34 | 924.74 |
| | | **Total** | **20** | **hrs** | **16.26%** | **1,174.68** | **1,849.48** |
| **Management** | * Monitor and control overall task performance | David | 10 | hrs | 100.00% | 587.34 | 924.74 |
| | | **Total** | **10** | **hrs** | **100.00%** | **587.34** | **924.74** |

**Distribution List**

DARPA/ITO
ATTN: Mr. Murray Burke
3701 N. Fairfax Drive
Arlington, VA 22203-1714

DARPA/ITO
ATTN: Mr. David Busigo, Jr.
3701 N. Fairfax Drive
Arlington, VA 22203-1714